

Determination of Molarity of an Acid or Base Solution Simulation

Objective:

1. Given a beginning question or research question, set-up an acid-base titration experiment so that the experiment provides data to answer the question.
2. Explain the term acid-base titration.
3. Write balanced chemical equations representing acid-base reactions.
4. Solve acid-base titration problems involving molarity, solution volume, and number of moles of solute (acid and base).
5. Calculate the concentration of a solute (acid or base) given information provided by a titration experiment.

Titration Simulation: http://pages.uoregon.edu/tgreenbo/acid_base.html

I.

1. Select Type of Reaction (*Strong Acid vs. Strong Base*)
2. Fill the Burette with (*Base*)
3. Select the Acid and Base (*acid: monoprotic, $1H^+$, base: XOH*) **write balance rxn**
4. Select the Indicator (*Phenolphthalein*)
5. Push Slider Up to Add a Volume of (*Try to add no more the 1-2mL to start, then dropwise once close to end point*)
6. After Titration, Calculate and Enter Molarity of (*use V_{acid} , M_{acid} , and V_{base} to find M_{base} , use stoichiometry*)

Repeat 3-4 time under the same conditions.

a. Record all value and then calculate the average molarity dismissing any trials that went beyond the end point – when color changes and stay for 30sec.

b. What does endpoint mean regarding $[H^+]$ and $[OH^-]$ when using phenolphthalein?

II.

c. Repeat but this time use an acid in burette (Step 2) and try both indicators (Step 4).

d. What do you suppose Methyl Red/ Bromothymol Blue indicate (regarding $[H^+]$ and $[OH^-]$) when endpoint is reached?